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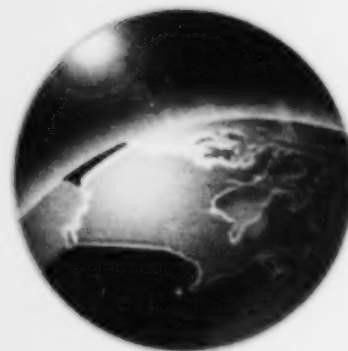
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Global Links: Multinationals in Canada: An Overview of Research at Statistics Canada

by John R. Baldwin and Guy Gellatly

Micro-economic Analysis Division
R.H. Coats Bldg., 18th Floor, 100 Tunney's Pasture Driveway
Ottawa, Ontario K1A 0T6

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Statistics Canada
Micro-economic Analysis Division

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John R. Baldwin and Guy Gellatly

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Abstract

The paper's main objective is to provide a concise synthesis of a wide array of data and research on multinationals originating in Statistics Canada, focusing on both historical and current studies.

Chapter 2 discusses the macroeconomic contribution of foreign multinationals, focusing on two leading indicators of foreign multinational activity, foreign control and foreign direct investment. This chapter also describes studies that evaluate the contribution that foreign-controlled companies make to aggregate trade flows, linking changes in multinational trade intensity to the strategic reorganization of their production activities.

Chapter 3 concentrates on the strategies and activities of foreign multinationals that are relevant to ongoing debates over whether the presence of foreign multinationals promotes, or hampers, Canada's industrial competitiveness. This chapter first examines evidence that domestic and foreign firms respond differently to domestic market conditions. Second, it asks whether foreign firms compete in different ways than domestic firms do. Third, it examines the relative emphasis that foreign multinationals place on innovation and technology practices, and reports on the relationship between these activities and observable market outcomes. Fourth, it reports on the contribution that foreign-controlled firms make to productivity growth. Fifth, it discusses new research that focuses on the relationship between foreign ownership and head-office employment. Studies in these areas speak directly to the issue of whether foreign multinationals truncate or develop their corporate activities in host markets.

Chapter 4 focuses on studies that examine the foreign activities of Canadian-owned multinationals and how their domestic plants compare to foreign-controlled plants operating in Canada.

Chapter 5 offers an appraisal of Statistics Canada's research on multinationals.

Keywords: multinationals, productivity, entry, mergers

Executive summary

This paper addresses three questions.

1. How important are foreign multinationals to the Canadian economy?

Answer: During the last 40 years, foreign multinationals operating in Canada experienced a retrenchment followed by a resurgence in their activities. These changes in foreign multinational activity coincided with important transitions in the regulatory regime governing foreign direct investment (FDI). The share of non-financial corporate assets under foreign control declined appreciably during the more restrictive regulatory era of the 1970s and early 1980s, when FDI was subject to tighter controls, only to rebound in subsequent years when the regulatory environment was made less restrictive. Consequently, the level of foreign control in Canada's economy by 2005 was at about the same level as it was during the mid-1960s.

2. How do the strategies and activities of foreign-controlled businesses compare with those of domestic-controlled companies?

Answer: Foreign multinationals make up a distinct group of firms in the Canadian economy. There are a large number of differences between these firms and domestic firms that operate solely within Canada. These include the following:

- (a) The plants of foreign-controlled firms are generally larger, have a higher labour productivity, pay more per worker and have a higher percentage of their employment in white-collar workers. Foreign firms are also more likely to diversify across industries than are domestic-controlled firms. It should be stressed that many of these differences between foreign-owned and domestic-owned businesses reflect structural factors—such as the size of business or industry membership. When these factors are not taken into account, the performance gap between foreign multinationals and domestic companies is large. But even after size and industry controls are accounted for, foreign multinationals were often shown to enjoy performance advantages over domestic companies.
- (b) Foreign multinationals react differently to economic conditions. For example, the diversification of domestic firms is related to domestic market characteristics while this is not the case for firms owned by foreign multinationals. Domestic entry responds to higher profitability at the industry level, but entry by foreign firms does not. The profitability of domestic firms is affected differently by industry- and economy-wide events than that of foreign firms. The investment decisions of domestic firms, as opposed

to foreign firms, are influenced differently by changes in the domestic relative price of capital and labour. Establishments of foreign multinationals create and eliminate fewer jobs in response to output changes than their domestic counterparts.

- (c) Foreign-controlled firms are more likely to have a Canadian head office than are domestic firms. The head offices of foreign-controlled firms accounted for six out of ten new head-office jobs created from 1999 to 2005. The effect of foreign takeovers has not been to reduce the number of head offices in Canada or head-office employment. As a result of foreign takeovers, more new head offices were created than lost in the post-1999 period, and employment in head offices was as high after the takeovers as it was before.
- (d) Domestic and foreign firms renew themselves quite differently. Greenfield entry—entry via the creation of new plants—is more important for domestic firms; merger or acquisition entry is more important for foreign firms.
- (e) A comparison of the extent and impact of innovation activity of domestic- and foreign-controlled firms shows that foreign-controlled firms innovate in all sectors more frequently than do Canadian-owned companies in almost all size categories. They are also more likely to introduce world-first rather than more imitative innovations. They are more likely to have a research and development (R&D) division. They are more likely to use advanced technologies.
- (f) Foreign-controlled plants not only have higher productivity, they are also more capital intensive, pay higher wages, and hire more white-collar workers (non-production workers). The higher productivity of foreign-controlled plants derives from a variety of factors, such as size, industry membership, technology use and R&D activity. Thus, many of the competitive advantages enjoyed by foreign-controlled establishments are bound up in what many observers regard as underlying structural or demographic factors—such as size of business and industry membership. But this tells us much about how foreign multinationals have integrated themselves into Canada's economic system. Foreign companies often gravitate to sectors of the economy where their competitive advantages can be more fully exploited. These include the large-firm sector, where economies of returns to scale and capital intensity are large, and high-tech sectors, where competition is often based on new innovative technologies. Foreign-controlled plants operate in those industries and in those segments of industries where size, technology and innovation capabilities are required for success. They bring to these sectors special capabilities related to their ability to manage knowledge assets.
- (g) Foreign-controlled multinationals have contributed positively to productivity in three ways. First, productivity growth has been relatively high in foreign-controlled plants compared to domestic plants. The relative contribution of foreign-controlled plant renewal (new plants replacing closed plants) to productivity growth has increased from 1970 to 2000. In the 1970s, the contribution that was made by domestic-controlled plant renewal was larger than that of foreign-controlled plants. This changed in the 1980s and 1990s, when foreign-controlled plant renewal contributed considerably more than the domestic sector to overall productivity growth. As a result, the contribution of

foreign-controlled plants to aggregate productivity growth has increased over the last three decades. Second, there are productivity spillovers from foreign-controlled plants to domestic producers. Third, mergers involving foreign producers more frequently lead to gains in productivity, wages, profitability or market share than do mergers between domestic firms.

- (h) The studies described in this report contribute to a deeper understanding of the role that foreign multinationals play in Canada's economic system. Canadian establishments of foreign multinationals have long held a substantial presence in Canadian markets in terms of their share of Canadian corporate assets and revenues. New microeconomic evidence to emerge from business surveys suggests that these establishments are not truncated, branch plant operations that do little to enhance the competitiveness of domestic industries. To the contrary, Canadian establishments of foreign multinationals are businesses that, on balance, make large investments in their knowledge capital—via relatively large investments in innovation, advanced technology and skilled labour. These investments often translate into superior market outcomes, as foreign-controlled establishments often enjoy relatively high rates of productivity growth compared to many of their domestic competitors.

3. What do we know about the foreign activities of Canadian multinationals?

Answer: Many of the studies described in this report found that, even after controlling for factors such as size and industry membership, foreign-controlled establishments still enjoyed performance advantages over domestic competitors. But new research has also shown that it is misleading to conclude that foreign-controlled businesses are somehow intrinsically better than their Canadian-owned counterparts. The data show that the performance advantages enjoyed by foreign multinationals may stem from the organizational advantages that these businesses enjoy that are associated with their international operations, as evidenced by the fact that domestic establishments of Canadian-owned multinationals—a subset of the domestic business population—resemble their foreign-owned competitors in many important respects. When it comes to measures of value-added per worker, gross output per worker, worker wages, the share of non-production workers and types of technologies used, there is not much difference between foreign-controlled plants and domestic-controlled plants whose parent has an international orientation. For R&D and innovation, the results indicate that domestic producers with foreign operations (referred to as domestic multinationals) actually exhibit a slightly better performance after controls for firm size, age and industry are taken into account. This suggests that the organizational advantages of multinationality, more so than the nationality of the parent firm, may help account for the success of foreign companies in Canadian markets.

Chapter 1. Introduction

The activities of multinational firms have engaged policy makers and economists for generations. The economic benefits (and costs) that foreign multinationals bring to (impose on) host economies are widely, and often vociferously, debated. Are these firms conduits through which skilled workers and innovative technologies are transferred to local economies—or do they export intangible assets and intellectual capital from local markets to their home economies? Do foreign multinationals contribute to increased levels of consolidation and concentration in the marketplace, thereby restricting competition and consumer choice, or does the presence of these firms foster the sort of competitive restructuring that improves the competitiveness of domestic businesses, ultimately serving to enhance consumer welfare? For these and other reasons, multinationals are of perennial interest to many constituencies—from economic nationalists, who view the entry of foreign-controlled firms as a threat to economic sovereignty, to proponents of free trade and globalization, who see the presence of foreign companies as vanguards of change, ushering in more integrated and competitive, domestic economies. National governments have adjusted their policy stance in accordance with changing perceptions of the desirability of encouraging and attracting foreign capital. Witness the shift in emphasis through the 1970s and 1980s from the more restrictive investment climate under Canada's Foreign Investment Review Agency to a more liberal climate under Investment Canada.

Empirical studies on the scope and nature of multinational activity can contribute much to these debates. Landefeld and Kozlow (2003) have demonstrated how data resources at the Bureau of Economic Analysis (BEA) have been used to support empirical research on multinational corporations. The authors identify a series of research questions that are germane to academic and policy-based research on multinationals, and evaluate the extent to which applied research at the BEA (or research based on BEA resources) has been successful in addressing different aspects of this research agenda. Landefeld and Kozlow's analysis provides a useful starting point for similar assessments by other statistical agencies.

Statistical agencies often have a comparative advantage in terms of the scope, breadth and depth of the data resources that they can bring to bear on specific issues. The case of multinationals is illustrative. Statistics Canada maintains a variety of collection programs that are actively used to support applied research on multinationals. These include programs that regularly publish statistics on foreign control—statistics mandated under the *Corporations Returns Act*. These also include the Balance of Payments program within the System of National Accounts, which records Canada's transactions with non-residents, and

has long produced data on inflows and outflows of foreign and domestic capital. They also include longitudinal data on business activities that are derived from programs such as the former Annual Census of Manufactures, which became the Annual Survey of Manufactures. Finally, in the 1990s, the advent of special business surveys on innovation and technology use created new sources of data—microdata that substantially improved our understanding of the strategic stance of both foreign-controlled and domestic firms, and of how differences in corporate strategy are correlated with performance outcomes.

Together, these data resources—whether aligned with longstanding collection programs or new survey programs—support an active research program on foreign multinationals operating in Canada and, to a lesser extent, Canadian-owned firms operating abroad. What follows is a general discussion of the state of research at Statistics Canada on multinationals.

Our main objective is to provide a concise synthesis of a wide array of data and research on multinationals, focusing on both historical and current studies. Some general comments on scope and style are warranted at the onset. First, in the interests of clarity, we do not delve extensively into discussions of concepts and methods, as thorough descriptions of each are often found in many of the background studies cited herein.¹ Accordingly, we limit discussion along these lines to only that which is essential to the development of the ideas presented herein.

Second, our aim is to describe how these research findings contribute to our general knowledge of multinationals. Analytic research is important, since it allows data to inform our understanding of the relevance and validity of different views regarding the role of multinationals. Analytical findings allow us to assess the appropriateness of various models that are used to frame our understanding of multinational behaviour. We do not dwell at length on the models that have been used for this purpose. They are well developed in Caves (1982) and Dunning (1993). Instead, we attempt to provide the empirical evidence needed to understand the appropriateness of different theoretical, or stylized, models of multinational behaviour that are sometimes featured in the academic literature.

We adopt the position that the business population is composed of heterogeneous agents and that it is informative to understand differences among these agents. Firms adopt different strategies in their quests for market share, profits and success. We focus our attention on the evidence that multinationals consist of an identifiable group with respect to their strategies and activities. And we ask whether the set of activities that characterizes this set of firms has been rewarded with increased productivity.

We structure our discussion around three general topics:

1. How important are foreign multinationals to the Canadian economy?
2. How do the strategies and activities of foreign-controlled businesses compare with those of domestic companies?

3. What do we know about the foreign activities of Canadian multinationals and the characteristics of their Canadian plants?

In Chapter 2, we discuss the macroeconomic contribution of foreign multinationals, focusing on two leading indicators of foreign multinational activity, foreign control and foreign direct investment. Research on these indicators speaks directly to the main issues that applied research on foreign multinationals is expected to address, namely, 'How large is the foreign multinational presence in Canada?' and 'Has the relative importance of foreign firms changed appreciably over time?' In this chapter, we also describe studies that evaluate the contribution that foreign-controlled companies make to aggregate trade flows, linking changes in multinational trade intensity to the strategic reorganization of their production activities. The studies set the stage for subsequent research that evaluates how foreign multinationals have reorganized their production activities in response to increased trade liberalization.

Chapter 3 concentrates on the strategies and activities of foreign multinationals that are germane to ongoing debates over whether the presence of foreign multinationals promotes, or hampers, Canada's industrial competitiveness. Five issues are examined.

First, we examine the evidence that domestic and foreign firms respond differently to domestic market conditions. Second, we ask whether foreign firms compete in different ways from domestic firms. Third, we examine the relative emphasis that foreign multinationals place on innovation and technology practices, and report on the relationship between these activities and observable market outcomes. Fourth, we examine the link between foreign multinationals and productivity growth. Fifth, we discuss new research that focuses on the relationship between foreign ownership and head-office employment. Studies in these areas speak directly to the issue of whether foreign multinationals truncate or develop their corporate activities in host markets.

Chapter 4 focuses on studies that examine the foreign activities of Canadian-owned multinationals. When viewed in relation to the breadth of research on foreign multinationals operating in Canada, this research on outward activities is comparatively modest. This said, some progress has been made on understanding the characteristics of Canadian-controlled subsidiaries and affiliates operating abroad.

We conclude in Chapter 5 by offering a brief synopsis of what we regard as the major contributions of Statistics Canada's research on multinational firms.

Endnote

1. Most of the Statistics Canada studies are available free on their website at http://cansim2.statcan.ca/cgi-win/cnsmcgi.exe?Lang=E&AS_Action=Find&ResultTemplate=Studies/StudiesHome1&AS_Univ=1

Chapter 2. The presence of foreign multinationals in Canada

In terms of sheer numbers, complex corporate entities are the exception, not the rule. Less than 1% of Canadian businesses have multi-unit operating structures—yet these multi-unit businesses generate more than one-half of all business income and employ over one-third of the workforce.² Many of the largest diversified corporations within this multi-unit group maintain very complex legal and operating structures, differentiating their production activities across a vast range of geographic and industrial boundaries. These sophisticated corporate entities capture the popular imagination, and weigh heavily on perceptions of industrial competitiveness.

Multinationality captures another form of business complexity. A multinational firm is one “that engages in foreign direct investment (FDI) and owns or controls value-adding activities in more than one country” (Dunning 1993, 3). Multinationals may choose to operate production establishments in a single industry or in many different industries. However, all multinationals are faced with the task of “organiz[ing] and coordinat[ing] multiple value-adding activities across national boundaries” (p. 4).

There has long been interest in the structural impact that foreign multinationals have on host economies.³ In practice, there are two statistical indicators that are widely used to gauge the level of foreign multinational activity in a host, or domestic, economy—estimates of foreign direct investment and estimates of foreign control. We discuss these below.

2.1 Leading indicators: Foreign direct investment and foreign control

Foreign direct investment (FDI) flows capture the period-specific sum of new inward funds— inflows of long- and short-run debt and equity into Canadian companies from non-residents— along with the domestic profits generated by foreign investments in Canada that are not transferred or repatriated to foreign countries. FDI inflows are transferred into businesses operating in Canada from non-resident firms that are linked to these Canadian businesses through what national accountants refer to as a direct investment relationship, wherein the non-resident firm owns a minimum of 10% of the voting equity in the Canadian company. This minimum equity stake is seen to afford the non-resident investor firm a “significant voice” in the management operations of the domestic company (see Lajule 2001).⁴ Statistics Canada’s Balance of Payments Division (BOP) also produces estimates of the stock of FDI, based on annual position surveys. This stock of investment capital results from the cumulation of past flows, and is referred to as the FDI position.

Collected and published by the BOP, these cross-border flows of investment capital into Canadian companies are often used to gauge the relative attractiveness of the Canadian economy to foreign investors. In effect, inward flows of debt and equity capture the marginal commitment of foreign investors to domestic Canadian operations, and they provide a basic measure of the degree of integration of the Canadian market with that of other national economies.

The geographic and industrial composition of inward FDI has been examined recently by Lajule (2001). His tabulations reinforce the importance of U.S. investors, long the primary source of external investment funds for Canadian firms. The relative importance of U.S. investors grew during the 1990s. By 1999, the United States' share of direct investment in Canada stood at 75%. Growth in this inward investment was concentrated in financial industries and in so-called New Economy sectors (communications, electric and electronic products industries). During the 1990s, the vast majority of this inward FDI was channelled through subsidiaries—companies in which the non-resident investor holds more than one-half of the voting equity. In 1999, \$212 billion out of \$240 billion in FDI occurred via subsidiaries.⁵

A recent paper by Baldwin and Gellatly (2005) reports on long-run changes in the stock of FDI investment in Canada. The authors examine shifts in the distribution of the stock of FDI investment across major industrial sectors, over 10-year intervals from 1961 to 1991. They note that the relative importance of different sectors as targets for FDI has, in the main, remained stable over time. The relative constancy of the FDI distribution provides some evidence that the factors influencing changes in the aggregate volume of foreign multinational activity in Canada during this long-run period were more general than industry-specific in nature.

Statistics on FDI find a large audience. Some regard these as indicators of market integration or globalization. Some see these as evidence of the extent to which domestic economic activities are being shaped by non-residents. In practice, the distinction between 'significant influence' (the base concept for identifying FDI flows) and 'controlling interest' is critical when evaluating the importance of foreign multinationals.

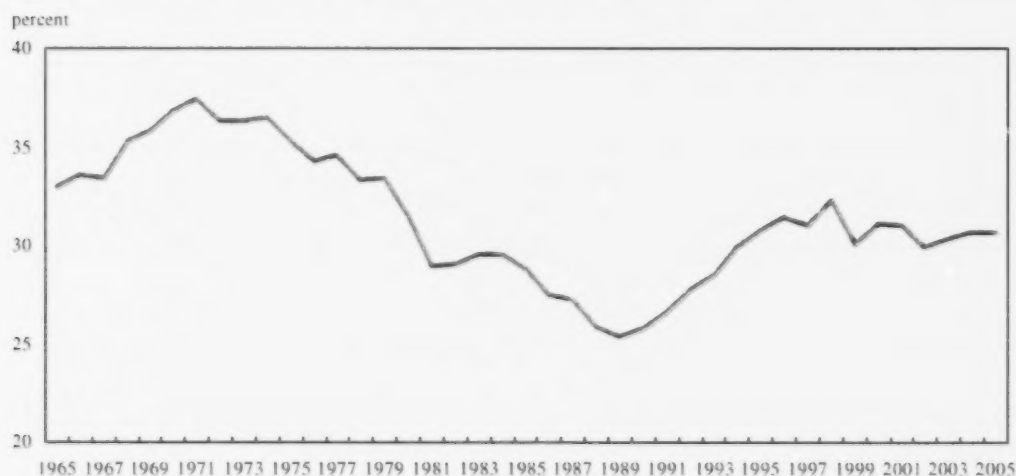
Statistics on foreign control are designed to gauge the 'direct' or 'effective' influence that foreign-based corporations exert on the domestic economy. A more stringent measure of foreign integration, the notion of control refers to the ability of non-residents to closely influence the strategic decisions of a domestic-based corporation, through the control of the firm in which they have invested. Direct control is usually defined as majority ownership (50%+) of voting equity (effectively the same equity threshold that defines a foreign-based subsidiary). Effective control arises when non-residents are able to direct the activities of a corporation through methods other than majority equity ownership (such as via intercorporate directorships). It should be noted that statistics on FDI and foreign control need not be congruent—that changes in FDI flows at the margin do not necessarily effect concomitant changes in the share of economic activity under foreign control.

Statistics Canada's Industrial Organization and Finance Division publishes regular reports on the extent of foreign control in Canada's corporate sector.⁶ These reports typically feature the share of corporate assets and revenues controlled by non-residents, both in the aggregate, and for specific sectors or industries. Aggregate performance measures, such as operating profits and profit margins, are also reported for both foreign-controlled and domestic-controlled companies. Canadian statistics on foreign control provide separate estimates for financial and non-financial industries. In 2005, the non-financial sector accounted for 65% of all foreign-controlled assets in Canada (Statistics Canada 2007).

Publications on foreign control generally present a limited time series, as a means of gauging recent movements. In practice, long-run statistics on foreign control—trends over a 30- or 40-year period—are difficult to compile, because of periodic changes to the industry classification systems that are used in survey-collection programs. Two new studies (Baldwin and Gellatly 2005; Baldwin, Gellatly and Sabourin 2006) report long-run estimates of the percentage of assets and revenues under foreign control.

These studies found that, during the last 40 years, foreign multinationals operating in Canada experienced a retrenchment followed by a resurgence in their activities (see Figure 1). These changes in foreign multinational activity coincided with important transitions in the regulatory regime governing FDI. The share of non-financial corporate assets under foreign control declined appreciably during the more restrictive regulatory era of the 1970s and early 1980s, when FDI was subject to tighter controls, only to rebound in subsequent years when the regulatory environment was made less restrictive. Consequently, the level of foreign control in non-financial industries by 2005 had moved back up to about what it was in 1965.

Figure 1
Foreign control of revenue of non-financial corporations



Sources: Statistics Canada, CANSIM table 179-0004, and John R. Baldwin and Guy Gellatly, 2005, *Global Links: Long-term Trends in Foreign Investment and Foreign Control in Canada, 1960 to 2000*, The Canadian Economy in Transition Series, Catalogue no. 11-622-MIE2005008.

Baldwin and Gellatly (2005) argue that regulatory change is a strong candidate for explaining long-run trends in foreign control, as the patterns of decline evident in the aggregate occurred broadly across many different sectors (see Table 1). What is more, the impact of regulation is apparent, even after accounting for a host of macroeconomic factors that are posited to determine the attractiveness of the Canadian economy to foreign investments (e.g., relative labour and capital costs, relative returns on investment). To further examine the factors associated with control changes, Baldwin and Gellatly extend their analysis using detailed micro-data on manufacturing firms.⁷ Using multivariate regressions, they test for the impact that different industry characteristics have on levels of foreign control in specific reference years and on changes in control over time. Their set of industry characteristics is meant to capture a broad range of economic factors such as profitability that, taken together, determine the attractiveness of different industries to foreign investors. On balance, they find little evidence that trends in the share of economic activity under foreign control reflect changes in industry conditions, and conclude that more general, macro-level factors (such as the regulatory regime) are better candidates for explaining changes in foreign ownership.

Table 1
Assets under foreign control, by industry, 1969 to 1987

	1969 to 1970	1979 to 1980	1986 to 1987	1969 to 1987 Percentage- point change	1969 to 1987 Percentage change
	percent				
Public utilities	3.3	1.2	0.5	-2.9	-86
Transportation	9.5	7.5	3.6	-5.9	-62
Communications	13.2	13.1	11.4	-1.8	-14
Agriculture, forestry and fishing	14.3	4.5	2.8	-11.5	-80
Construction	14.1	10.5	6.1	-8.0	-57
Storage	17.0	5.5	3.1	-13.9	-82
Retail trade	21.5	13.0	12.9	-8.6	-40
Services	23.1	14.8	12.8	-10.3	-44
Wholesale trade	26.8	24.8	29.6	2.8	11
Other mining	57.5	44.0	23.7	-33.8	-59
Manufacturing	57.8	48.5	45.1	-12.7	-22
Metal mines	61.5	32.8	18.5	-43.0	-70
Mineral fuels	82.1	55.7	36.8	-45.3	-55

Source: Statistics Canada, John R. Baldwin and Guy Gellatly, 2005, *Global Links: Long-term Trends in Foreign Investment and Foreign Control in Canada, 1960 to 2000*, Table 3, The Canadian Economy in Transition Series, Catalogue no. 11-622-MIE2005008.

Several studies (Taylor 2001; Guèvremont 2001; McMechan, Lothian and Farnworth 1992) have explored the changes in industrial organization that underlie shifts in foreign control. McMechan, Lothian and Farnworth (1992) report on successive waves of merger and acquisition (M&A) activity, and focus on the "foreign component of [the] merger wave" during the late 1980s. The authors found, *inter alia*, that M&A activity was heavily concentrated in certain sectors, and had a "considerable impact" on control trends in mining, manufacturing and wholesale trade. Taylor (2001) found that gains in foreign control during the 1990s were primarily due to large foreign-controlled firms increasing their holdings in sectors that already exhibited comparatively high degrees of foreign control (examples include chemical products

and textiles, and transportation equipment). Guèvremont (2001, 3.1) revisited the balance between M&A and internal growth, and found that the majority of the gains in foreign control through the 1990s did not result from merger and acquisition, but rather were the result of "the growth of existing foreign controlled firms already operating in Canada."

2.2 Foreign multinationals and trade flows

Multinationals are firms that extend across national boundaries—both with regards to investment flows and also in terms of their trading relationships. Multinationals in their original form were large international trading organizations that bought products in one country and sold them in another. They continue to move products—though these may now come from their own factories—from one country to another.

Trade flows therefore are another means of gauging the structural impact of non-residents on the domestic economy. Landefeld and Kozlow (2003) identify trade flows and trade balances as germane to the structural evaluation of multinationals. An analysis of the composition of trade flows furthers our understanding of the extent to which policies aimed at trade liberalization also create the economic conditions under which multinationals flourish.

The importance of foreign-controlled firms to inward trade flows was examined in Statistics Canada (1981).⁸ Foreign multinationals were found to be the major source of domestic imports, accounting, in 1978, for "fully 72% of [the value of] these identified imports" (p. vii). Foreign-controlled importers in manufacturing and wholesale trade were especially important sources of these inward flows, and these foreign multinationals exhibited much larger import intensities than their domestic competitors. Another major finding is that foreign-controlled importers were found to source extensively from their home countries. In the American case, "[f]ully 87% of imports by U.S. controlled firms in Canada originated from the United States" (p. vii). Mersereau (1992) reached similar conclusions in his analysis of importing firms: foreign-controlled firms tend to be import intensive, and account for a large share of imports. In addition, the study went one step further and found that fully one-half of Canadian imports involved trade between affiliates or 'tied' trade.

More recently, Olineck and McMechan (1996) have examined how the production activities of foreign multinationals are associated with the "ownership structure of Canadian trade" (p. 7). They document the importance of the intrafirm transactions of foreign multinationals to Canadian trade flows. The authors demonstrate that trade flows in foreign multinationals are consistent with the 'integrated production' models that are widely touted as a salient characteristic of globalization. Foreign-controlled firms were shown to have much higher import propensities than their domestic counterparts, along with higher ratios of related-party trade to total trade (a base indicator of integrated production).⁹

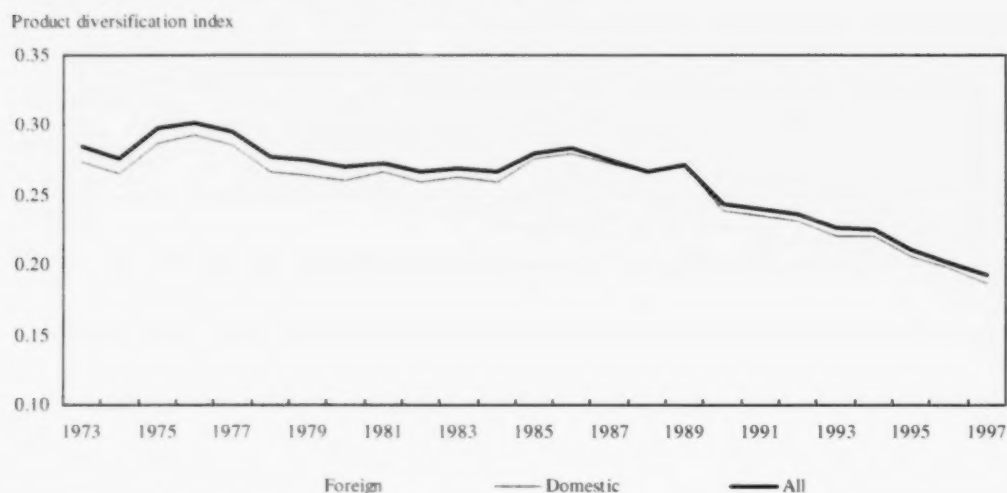
Similar findings are apparent on the export side, as foreign-controlled firms also exhibit higher export propensities than domestic firms. Cross-border transactions between Canadian-based affiliates and their parent companies accounted for a large share of total exports. In the

aggregate, related-party transactions accounted for 57% of Canadian exports to the United States. Among U.S.-controlled firms based in Canada, related-party transactions made up 72% of exports (Olineck and McMechan 1996). In their discussion of these outward flows, the authors drew on a study by Krajewski (1992) in which "corporate strategy, cost advantages and internal supply lines" were identified as "the primary motivating factors for intra-firm exports by Canadian subsidiaries of U.S.-based MNCs [multinational corporations] to the U.S. parent" (Olineck and McMechan 1996, 9). The advantages of integrated production include reduced transaction costs, and the scale advantages that emerge from longer production runs.

Following Olineck and McMechan (1996), an analysis of trade flows is valuable because the composition of these flows provides some indication of the production arrangements favoured by multinationals. One salient issue, then, is not simply the extent to which multinationals are engaging in trade, but rather how multinationals have re-engineered their production systems in response to trade liberalization. Cameron and Cross (1999) and Cross (2002) provide indirect evidence of integrated production systems in multinationals from examining changes in the import content of exports. Subsequent to the implementation of the Free Trade Agreement (FTA), there was a sharp increase in the import intensity of Canadian exports (that is, in the use of imports as inputs in the production of exports). The authors note that changes in the import content of exports reflect the globalization of production systems. These include "the adoption of new production processes, especially the use of imported parts in plants that have a mandate for global production for certain product lines from their parent company (Cameron and Cross 1999, 3.3)." Here the automotive sector is illustrative, with cross-border trade dominated by within-company flows (Cross 2002, 3.7).

The gains in intrafirm trade that result from more integrated (cross-national) production systems represent, in effect, a form of comparative advantage at the level of the firm. That the liberalization of trade rules is encouraging multinationals to restructure their operations—in ways that better reflect the strengths and limitations of home and host economies—would certainly accord with the expectations of most observers. A slightly deeper issue rests with the pace of organizational change, that is, how rapidly the production routines of foreign multinationals have changed in response to trade liberalization, when viewed against the practices of their domestic-controlled competitors. This issue of response behaviour provides some evidence on how trade is affecting the relative competitiveness of foreign and domestic firms. Using data on Canadian manufacturing plants from the Annual Survey of Manufactures, Baldwin, Beckstead and Caves (2001) found evidence of increased commodity-level specialization subsequent to the implementation of the FTA. Notably, the authors also demonstrated that this trend toward higher plant-level specialization occurred more rapidly in the plants owned by foreign multinationals than in domestic plants. Foreign-controlled plants were more diversified, on average, than domestic-controlled plants prior to the trade agreements, and increased their degree of specialization (see Figure 2). In so doing, foreign-controlled plants have demonstrated a propensity for restructuring their operations to meet the changing nature of competition.

Figure 2
Product diversification of manufacturing plants



Source: Statistics Canada, John R. Baldwin, Richard E. Caves and Wulong Gu, 2005, *Responses to Trade Liberalization: Changes in Product Diversification in Foreign- and Domestic-controlled Plants*. Economic Analysis (EA) Research Paper Series, Catalogue no. 11F0027MIE2005031.

The response of foreign multinationals and domestic firms to trade liberalization is likewise the subject of research by Baldwin, Caves and Gu (2005). Following Baldwin, Beckstead and Caves (2001), the authors examine changes in plant-level specialization during the 1980s and 1990s, and explore plant and industry characteristics related to plant specialization. The study explores how the reduction in tariffs influenced plant-level specialization. The authors find that specialization is most apparent in industries with the largest declines in tariff rates. This finding is consistent with the expectations of many analysts who have argued that trade liberalization will effect improvements in production efficiency (via specialization and longer production runs). Baldwin, Caves and Gu also shed new light on how the production systems of foreign-controlled plants compare with those of their domestic competitors. They found that higher levels of product diversification in foreign-controlled plants before the reduction in tariffs associated with the FTA with the United States reflected basic differences in firm size and industry membership. After controlling for these factors, there was little difference between foreign-controlled plants and their domestic competitors. However, after the FTA was implemented, foreign-controlled plants adjusted their production activities more rapidly in response to changes in trade policy than did domestic plants.

Several other studies point to differences in the response of foreign multinationals to the FTA. Baldwin and Gu (2006) examine changes in the patterns of plant openings and plant closings in the manufacturing sector over the last three decades. They examine the various components of market-share turnover—entry, exit, growth and decline in incumbent plants—by decade since the 1970s. Similar cross-industry patterns are found in the 1970s and 1980s. But the 1990s differ substantially in that the importance of plant entry and exit increases (Baldwin and Gu, 2006, Table 1). Much of this change occurred in the foreign sector, which experienced large amounts of plant exit and entry.

Much of the research described in this chapter associates changes in trade flows, or changes in trade regimes, with the production strategies of foreign multinationals. Research that explores the strategies and activities of these firms is germane to the larger issue of whether foreign multinationals bolster, or hamper, the innovativeness of host economies. In the following chapter, we examine studies that address this issue directly—by focusing on the practices of foreign multinationals related to research and development, innovation, and head-office location.

Endnotes

2. See Baldwin et al. (2000).
3. Landefeld and Kozlow (2003) identify several issues that are germane to the structural impact of multinational companies. These include their impact on 'major domestic aggregates' including aggregate productivity, corporate profits, gross domestic product, wages, incomes and employment.
4. Other investment activity that does not satisfy this 10% rule is generally regarded as portfolio investment. Portfolio investments do not satisfy this 10% equity rule, and describe a set of investment activities that are more passive in nature (e.g., bonds, money market instruments). For discussion of these issues, see Lajule (2001).
5. For research on portfolio investment and globalization, see Laliberté (1997a, 1997b).
6. Statistics on foreign control are mandated by the *Corporations Returns Act*.
7. These data were derived from Statistics Canada's Annual Survey of Manufactures.
8. We discuss outward flows in Chapter 4.
9. Olineck and McMechan (1996, 8) define related-party trade as "trade that takes place between two corporations which are in a parent–subsidiary relationship or between two subsidiaries within a large enterprise."

Chapter 3. The distinctiveness of the domestic operations of foreign multinationals

Populations of businesses are made up of heterogeneous agents. Most firms commence life as small entities. Some become large firms. The latter transform themselves in many ways—in terms of ingesting information, adopting more capital-intensive processes, and in developing the human resource strategies required to run large organizations.

Different types of firms exist side by side because industries also experience life cycles. Early in the product life cycle, industries will often have large numbers of firms that experiment with new products. Later, as products and technology become more standardized, firms will compete on the basis of price and focus on scale economies to reduce unit costs. Even within industries at particular stages of the life cycle, there are a range of firms that are experimenting with different strategies. In each industry, some firms adopt more innovative strategies; others adopt less innovative strategies. And competitive forces determine the relative success of each.¹⁰

While the theories of the multinational firm advanced by Caves and Dunning differ in many dimensions, they each recognize that the transnational nature of this type of firm means that the optimization or decision-making process is potentially more complex than it is for domestic firms. The multinational either optimizes global profits or, at least, considers economic conditions elsewhere when making local decisions. In doing so, it must respond to a more varied range of circumstances (e.g., tax regimes and factor prices in many countries). It also has a larger set of technological opportunities available to it that it can draw on for its domestic production processes. This suggests that it may respond differently to domestic conditions than a domestic firm would.

3.1 Differences in the production process

Substantial evidence derived from Statistics Canada files on manufacturing firms indicates that foreign-controlled and domestic-controlled firms are drawn on average from different populations. Baldwin (1995) uses data from the manufacturing sector and reports that the plants of foreign-controlled firms are generally larger, have higher labour productivity, pay more per worker and have a higher percentage of their employment in white-collar occupations. Foreign firms are also more likely to diversify across industries than are domestic-controlled firms.

All of this accords with a theory of multinational activity that argues that when these firms go abroad to establish production facilities, they are doing so to exploit a knowledge asset with particular qualities (Caves 1982). These firms own assets that have a certain indivisibility, whose value cannot be easily realized in other countries through arm's-length transactions like licensing, and that therefore require foreign direct investment and control to be fully exploited. Foreign firms are seen to cross national boundaries so as to exploit these types of assets, whether they relate to research and development, technology or brands.

When these assets are important, foreign-controlled plants should be larger because they are making use of technological know-how that allows plants to realize economies of scale. They will have higher labour productivity, because of higher capital intensity that comes from their greater ability to apply capital to the production process. They will pay higher wages because their workforce is more skilled, because of the need to work with advanced technologies and other special assets. They will also be more diversified across more industries because they manage a portfolio of brands and other assets that can be put to work in more than one industry. They will have a higher proportion of white-collar workers because of the need to manage more complex technological processes and to coordinate the production of more products across a wider range of industries. These differences have been summarized in a number of studies by Statistics Canada (see Table 2 for one such comparison).

Table 2
Advantage of multinational plants over domestic plants, 1993

	percent
Labour productivity	51
Multifactor productivity	34
Production worker wages	14
Non-production worker wages	5
Probability of conducting research and development	14
Probability of innovating	10
Use of advanced manufacturing technologies	16

Notes: Plant size and age controls used for controls. The advantage of multinational plants is calculated as a weighted average of the advantages of the plants of Canadian, U.S., and other multinationals over domestic plants not affiliated with multinationals.

Source: Statistics Canada, John R. Baldwin and Wulong Gu, 2005, *Global Links: Multinationals, Foreign Ownership and Productivity Growth in Canadian Manufacturing*, The Canadian Economy in Transition Series, Catalogue no. 11-622-MIE2005009.

The distinctiveness of foreign multinationals should lead to differences in the reactions of these firms to domestic economic conditions. Several studies confirm this tendency. Gorecki (1980) noted that the tendency for domestic firms to diversify is related to the market characteristics of Canadian industries (i.e., concentration), while this is not the case for firms owned by foreign multinationals. Baldwin and Gorecki (1991) investigate the determinants of entry to Canadian markets and observe that domestic entry responds to higher profitability at the industry level but that entry by foreign firms does not, thereby suggesting that multinational firms have a broader global perspective. Warren (2005) studies changes in profitability of domestic and foreign firms during the 1990s and finds that the two generally respond differently

to industry- and economy-wide events. The rate of return on capital in domestic enterprises is more sensitive to their market share and changes in gross domestic product than in foreign enterprises. Caves (1990) examined the investment decisions of domestic as opposed to foreign firms and found that the former were sensitive to changes in the domestic relative price of capital and labour but that the latter were not—which accords with a world where the capital costs of multinational firms are derived from international rather than domestic markets.

Differences in the operations of foreign multinationals also stem from differences in the production process. There are relatively large differences in the capital intensity and skill-based intensity of plants owned by foreign multinationals and domestic plants. As a result, the response of employment to changes in outputs should be distinctive. Firms that have more invested in their workers are less likely to lay them off in the face of declining demand. They may also maintain more stable production levels in the face of fluctuations in demand, because their capital intensity forces large cost penalties on them when production fluctuates. In keeping with this interpretation of the distinctiveness of foreign multinationals, Baldwin and Dhaliwal (2000) find that the establishments of foreign multinationals create and eliminate fewer jobs in response to output changes than their domestic counterparts. In this sense, labour markets where foreign multinationals are present are less volatile.

3.2 Foreign multinationals and the competitive process

Studies of multinationals have long concerned themselves with the possibility that the presence of these firms may hamper domestic competition, since they just replicate the market structure of their home country (i.e., the United States) in a small economy and thus engender even tighter oligopolistic interdependence.¹¹

While the analytical studies at Statistics Canada do not directly focus on cross-border similarities in behaviour, they have shed light on the nature of the dynamic process whereby competition replaces less efficient with more efficient firms—through entry, exit, growth and decline—and the contribution that foreign multinationals make to this process.

Each year, manufacturing plants are being renewed by the entry of new plants and the exit of old ones. The cumulative effect of plant entry and exit is significant. For example, some 40% of all manufacturing plants in existence in 1997 were new plants that entered over the 1988-to-1997 period. Some 47% of the manufacturing plants operating in 1988 were no longer in operation in 1997 (Baldwin and Gu 2006).

From 1989 to 1999, a large amount of market share was transferred from declining firms to growing firms. Firms that entered the market via the creation of greenfield plants (entry via the creation of new plants) accounted for 8% of average industry total output in 1999, and continuing firms that grew but that had no mergers gained 25% of market share over the 10-year period. Firms that exited by closing down accounted for 23% of the market in 1989, and incumbents that lost market share but were not involved in mergers lost 13% of market share during the period. In addition, over a quarter of market share was possessed by firms that were involved in a takeover (Baldwin and Gu 2006).

Foreign multinationals contribute to the dynamic process that sees some firms replacing others. But this process differs for foreign multinational and domestic firms, primarily because foreign multinationals operate in different industries and/or are larger in size than domestic firms. In the domestic sector, there is more greenfield entry coming from firm entry associated with the building of new plants, and more closedown exit related to the departure of firms that close down their plants. The rates of greenfield entry of domestic firms are three times the rates of entry of foreign firms (Baldwin 1995).

Takeovers by mergers and other control changes bring new firms into industries when the sale of a plant is to firms from outside the industry. On an annual basis, the shifts that occur in market share as a result of control changes are just as large as greenfield entry and closedown exit (Baldwin 1995, Chapter 3). The decadal cumulative effect of the two is also similar in magnitude (Baldwin 1995, Chapter 4).

But the two forms of entry are not equally prevalent everywhere. Control changes are more likely to occur in the large-firm segment of most industries, while the rate of greenfield entry is higher in the smaller firm segment (Baldwin 1995, Chapter 10). Similarly, control changes are more likely to occur in industries with fewer firms—those with scale economies that are highly concentrated (Baldwin 1995, Chapter 3).

The view of the multinational as involving an internalization of difficult transactions associated with indivisible knowledge assets also suggests that foreign entry should occur more frequently through acquisition (or merger entry) than through greenfield entry. If a specialized asset cannot be fully exploited in the original home market of the foreign company, then the Canadian market for it is also likely to be small, relative to firm size. Such markets are relatively concentrated and entry to them occurs more frequently through acquisition than by greenfield entry. Entry via merger may occur when the acquired domestic assets are needed to complement foreign assets. These types of domestic assets are more likely to be found in existing large firms and, hence, foreign takeovers will more likely take place in relatively large firms.

Evidence from the Canadian manufacturing sector confirms these differences. Domestic firms are more likely to renew themselves via greenfield entry than via merger or acquisition entry (Baldwin 1995, Chapter 11). In contrast, foreign multinational firms place relatively more emphasis on the merger process. This accords with the view that the foreign multinational is the vehicle that brings in specialized knowledge assets to the domestic economy.

3.3 Propensity for research and development and innovation

One of the areas that has concerned many Canadian commentators who regard foreign firms as being truncated, branch-plant operations is the extent to which foreign multinationals perform little research and development (R&D) in Canada and lag behind in adopting state-of-the-art technologies.

Considerable research at Statistics Canada has focused on foreign- versus domestic-firm profiles of R&D, advanced technology use and innovation outcomes. The advent of large-scale innovation and technology surveys in the 1990s has greatly improved our knowledge of the factors that distinguish more innovative businesses from other firms. These surveys collect detailed information on strategies and activities that, in certain cases, have been linked to administrative data sources to examine differences in firm performance. What has emerged is a portrait of innovative firms as compleat firms—active, forward-looking businesses that engage purposively in a range of complementary business strategies in support of their innovation and growth objectives (Baldwin and Gellatly 2003). The evidence from these studies is that foreign-controlled businesses are often highly engaged in the innovation process in Canada, and they make proportionately large contributions to domestic innovation systems.

The role of foreign firms in Canada's innovation system has received much public attention. Foreign multinationals operating in Canada have sometimes been portrayed in a negative light. For many years, it was argued that their presence in Canada fostered a branch-plant mentality. The operations of foreign-controlled firms have been described as 'truncated,' in that these firms were alleged not to be engaging in value-creating activities, such as R&D, that can be expected to foster innovation in, and bolster the competitiveness of, the domestic economy. In this section, we present evidence from a range of studies that speaks to these issues directly, many of which derive from special surveys on innovation and technology use.

Baldwin and Hanel (2000) provide a detailed analysis of differences in the innovation practices of foreign-controlled and domestic manufacturers. The authors find no evidence that the R&D activities of foreign-controlled firms are truncated—to the contrary, foreign-controlled firms are often more active in R&D than are their domestic competitors. Differences in the innovation process—the set of inputs and constraints that are relevant to the production of innovations, along with the market outcomes that result from their commercialization—are also apparent. Foreign-controlled firms place relatively more emphasis on collaboration. While these firms do benefit disproportionately from intra-firm networks involving parents and subsidiaries, they also rely, to a greater extent, on local R&D units when developing new products and processes. Foreign firms were also shown to rely more extensively on unrelated firms when acquiring technology than on intra-firm networks. Linkages with outside actors, such as universities, are just as apparent in foreign multinationals as in domestic firms. These findings demonstrate that the innovation activities of foreign-controlled firms do not occur in isolation from their host economies. Rather, these firms develop innovation competencies by actively participating in local innovation networks.

Baldwin and Hanel (2000) also highlight basic differences in innovation outcomes between foreign and domestic firms. They report that, far from being passively dependent on R&D from their parents, foreign-controlled firms in Canada are more active in R&D than the population of Canadian-owned firms. They are also more often involved in R&D collaboration projects both abroad and in Canada. As expected, foreign subsidiaries enjoy the advantage of accessing technology from their parent and sister companies. While foreign multinationals

are more closely tied into a network of related firms for innovative ideas than are many domestic-owned firms, their local R&D unit is a more important source of information for innovation than are these inter-firm links. Foreign subsidiaries also more frequently report that they are using technology from unrelated firms. Moreover, the foreign multinational is just as likely to develop links into a local university and other local innovation consortia as are domestic-owned firms. This evidence indicates that foreign multinationals in Canada are not, on the whole, operating subsidiaries whose scientific development capabilities are truncated—at least not in comparison with domestic-owned firms.

A comparison of the extent and impact of the innovation activity of domestic- and foreign-controlled firms shows that foreign-controlled firms innovate in all sectors more frequently than Canadian-owned companies in almost all size categories. They are also more likely to introduce world-first rather than more imitative innovations. Their apparent innovation advantage is most pronounced in the consumer goods sector. Finally, foreign-controlled firms are more likely to protect their innovations with patent protection.

These differences between foreign- and domestic-controlled firms are related to differences in the characteristics of the underlying populations from which these groups are drawn. Innovation is often higher in larger firms because of scale advantages, and it often requires specific, specialized inputs, such as R&D. Baldwin, Hanel and Sabourin (2002) show that when two characteristics (firm size and R&D activity) are taken into consideration, the differences in the intensity of all types of innovation (both products and processes) between domestic and foreign firms disappear.

On the other hand, process innovations are more common in foreign-controlled companies, even after controlling for differences in R&D intensity (Baldwin, Hanel and Sabourin 2000). A recent survey of food manufacturers found that 42% of foreign-controlled companies had introduced an innovation into their processing methods, compared with about 30% of domestic-owned firms. Multinational firms are important conduits for transferring technical knowledge in the form of process innovations (Baldwin and Sabourin 1999). What is more, foreign-controlled companies are often more productive and pay higher wages than domestic firms in the food-processing sector.

Innovation strategies are often closely related to technology use. Several Statistics Canada studies have concentrated on exploring technological differences between foreign- and domestic-controlled firms. Foreign-controlled businesses generally place more emphasis on technology adoption, even after controlling for differences in firm size and industry membership. Baldwin and Diverty (1995), Baldwin and Sabourin (1995) and Baldwin, Rama and Sabourin (1999) note that domestic plants lagged behind foreign-controlled plants when it comes to the use of advanced manufacturing technologies, both in the late 1980s and through the first half of the 1990s. Moreover, changes in the macroeconomic environment affected these firms differently. The gap between foreign and domestic plants widened during the recession of the 1990s, and it narrowed slightly thereafter (Baldwin, Rama and Sabourin 2000). The early 1990s recession had a greater influence on the investment behaviour of domestic firms.

A technology advantage in foreign-controlled firms was also apparent in a study of food-processing plants. Foreign-controlled plants make greater use of a broad range of advanced technologies, even after accounting for underlying differences in industry membership and plant size (Baldwin, Sabourin and West 1999; Baldwin and Sabourin 2002b).

These results are consistent with technological differences between Canadian and U.S. firms. Baldwin and Sabourin (1996, 1998) examine whether technology use is lower in Canada than in the United States. In the five Standard Industrial Classification two-digit manufacturing industries where comparisons of technology use in Canada and the United States can be made, large Canadian establishments closely resemble their U.S. counterparts, but small firms lag behind. This suggests that large Canadian firms are more technologically competitive than their smaller counterparts, which is consistent with the finding that they are also more export intensive and therefore more involved with international markets. Baldwin and Gu (2004) report that exporters are more inclined to make greater use of advanced technologies.

In sum, the results of firm-level research on innovation and technology use stand in sharp contrast to 'branch plant' explanations of multinational development. There is no evidence that foreign firms operations in Canada are truncated, or deficient, in terms of their propensity for innovation or technology adoption—in fact, the converse is true.

3.4 Productivity performance

Innovation and technology use garner considerable attention because both have been shown to influence market outcomes. Several Statistics Canada studies point to labour productivity advantages in foreign-controlled companies, even after controlling for differences in industry membership and plant size. This productivity advantage is a persistent characteristic of foreign multinationals, and has increased over time. Baldwin and Dhaliwal (2001) report that value-added per worker of foreign manufacturing plants was 57% higher than domestic manufacturing plants after controlling for size and industry in 1973. By 1993, this had increased to 80% (see Table 3).

Foreign-controlled plants not only have higher productivity, they are also more capital intensive, pay higher wages, hire more white-collar workers (non-production workers). Foreign firms are more likely to conduct research and development (R&D) and to introduce innovations (Baldwin and Gu 2005). The higher productivity of foreign-controlled plants derives from a variety of factors, such as size, industry membership, technology use and R&D activity—although these, taken together, do not account for all of the variation in productivity between foreign-controlled plants and domestic companies. For example, Baldwin and Sabourin (2001) find that while the growth in productivity of manufacturing plants is positively and significantly related to the use of advanced technologies, this growth is higher in foreign-controlled establishments—this despite the inclusion of plant size, R&D performance and technology use as controls in the multivariate analysis used in this study. It is, therefore, other unmeasured characteristics that give foreign multinationals their productivity advantage.

Table 3

Ratio of the labour productivity of foreign to domestic manufacturing plants with the effect of controlling for size and industry differences

Year	Shipments per worker			Value-added per worker		
	No control	Control for size and industry	Difference	No control	Control for size and industry	Difference
1973	1.80	1.73	0.07	1.66	1.57	0.09
1983	2.09	1.90	0.19	1.92	1.73	0.19
1989	2.22	1.96	0.26	2.12	1.86	0.26
1993	2.27	1.96	0.30	2.07	1.80	0.26

Sources: Statistics Canada, John R. Baldwin and Naginder Dhaliwal, 2000, Labour Productivity Differences Between Domestic and Foreign-Controlled Establishments in the Canadian Manufacturing Sector, Analytical Studies Branch Research Paper Series, Catalogue no. 11F0019MIE2000118, and John R. Baldwin and Naginder Dhaliwal, 2001, "Heterogeneity in labour productivity growth in manufacturing: Differences between domestic- and foreign-controlled establishments," in *Productivity Growth in Canada*, 61-76, Catalogue no. 15-204-XIE1999000.

Differences in productivity levels need not translate into differences in the contribution of each sector to aggregate productivity growth—if each sector is growing equally. But foreign multinationals have been contributing disproportionately to overall productivity growth in manufacturing.

This finding comes from a number of studies that examine how the dynamics of the competitive process contribute to productivity growth. The competitive process that brings new plants into an industry and forces old plants out makes a significant contribution to aggregate productivity growth in manufacturing industries (Baldwin 1995). Most of this has come from new plants created by foreign multinationals (Baldwin and Gu 2006).

Productivity measures are usually produced for the entire economy or for an entire industry, not for individual businesses. But aggregate productivity growth is derived from the weighted sum of the growth in the productivity of individual firms in the economy.

Overall productivity growth may be the result of plant renewal (entry and exit) or it may come from continuing incumbents. Within each population of firms, it may be produced primarily by domestic, as opposed to foreign, producers.

Each year, manufacturing plants are being renewed by the entry of new plants and the exit of old ones. The opening up of new plants and the closedown of old plants is important. For example, some 40% of all manufacturing plants in existence in 1997 were new plants that entered over the 1988-to-1997 period. Some 47% of the manufacturing plants operating in 1988 were no longer in operation in 1997. When calculated using employment, entry and exit rates are around 12% in the 1970s, while in the 1980s and 1990s, these rates increased to above 20%. During the 1990s, exits accelerate to 27% compared with the entry rate of 20%, probably because of restructuring that was associated with North American trade liberalization.

Entering plants are considerably more productive than the exiting plants that they displace. Using continuing incumbents as the metric to which each is compared, entrants are 22 percentage points more productive than the exiting plants that they replace in the period from 1988 to 1997.

As a result of this differential, plant renewal arising from entry and exit contributes 15% to 25% of labour productivity growth during the 1973-to-1979, 1979-to-1988, and 1988-to-1997 periods. The contribution that entry and exit make to productivity growth is generally larger than their share of employment. Plant turnover accounted for one quarter of aggregate productivity growth in the 1973-to-1979 period, 20% in the 1979-to-1988 period, and 15% to 20% in the 1988-to-1997 period.

All entrants do not contribute equally to productivity growth. A disproportionately large share of the contribution to labour productivity growth is due to foreign-controlled firms closing less productive plants and opening more productive plants.

The proportion of labour productivity growth that is accounted for by entry has been relatively constant over the last three decades; but the share that has originated in domestic plants has fallen over the period. Over the 1988-to-1997 period, foreign-controlled entrants accounted for 20% of the employment of all entering plants and foreign-controlled exiters accounted for 28% of the employment of all exiting plants. But plant turnover due to foreign-controlled firms provides 60% of the contribution to overall productivity growth that comes from total plant renewal.

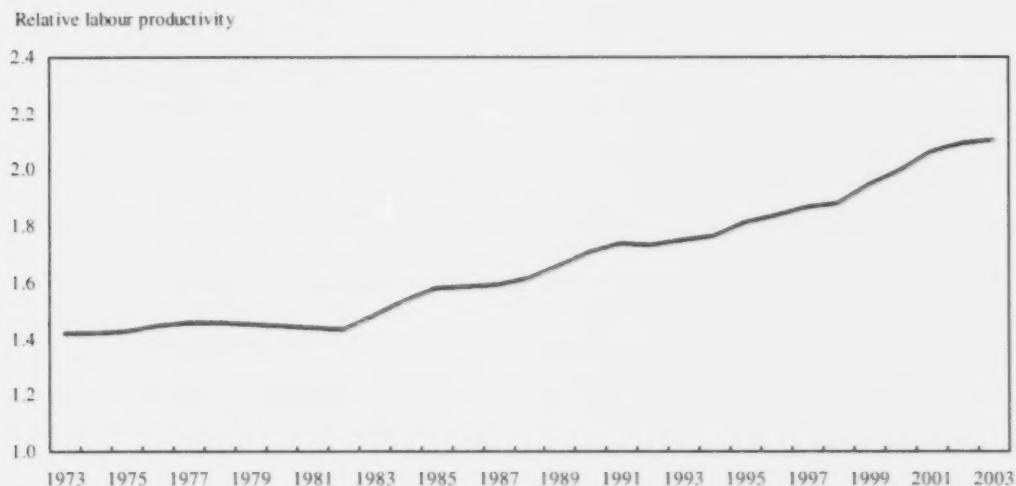
The relative contribution of foreign-controlled plant renewal in the manufacturing sector has increased from 1970 to 2000. In the 1970s, the contribution that was made by domestic-controlled plants was larger than that of foreign-controlled plants. This changed in the 1980s and 1990s, when foreign-controlled plants contributed considerably more than the domestic sector to overall productivity growth.

Foreign-controlled plants have become increasingly important as a source of entry. Their size has gone up, relative to domestic plants. They have become increasingly productive, relative to both domestic entrants and relative to incumbents. The latter increase was particularly large in the period after the Free Trade Agreement (FTA) and the North American Free Trade Agreement (NAFTA).

Baldwin and Gu (2005) extend this analysis to consider the contribution to productivity growth that is made by foreign-controlled firms as a whole—from both the creation of new plants and increases in productivity growth in incumbent plants. The results show that over two-thirds of labour productivity growth during the last three decades came from foreign-controlled firms, despite the fact that they accounted for less than 40% of employment.

As a result, the relative labour productivity of foreign-controlled plants in the manufacturing sector increased considerably, relative to domestic plants, over the last three decades (see Figure 3).

Figure 3
Labour productivity of foreign-controlled plants compared to domestic-controlled plants in the manufacturing sector, 1973 to 2003



Note: The relative labour productivity is the foreign value added per worker divided by the domestic value added per worker.

Source: Statistics Canada, Annual Survey of Manufactures.

In summary, foreign-controlled plants have become increasingly important as a source of entry. They have become increasingly large, relative to domestic entrants. They have become increasingly productive, relative to both domestic entrants and relative to incumbents. The latter increase was particularly large in the post-FTA, NAFTA period. Finally, the contribution to aggregate productivity growth that came from foreign-controlled plant turnover associated with entry and exit grew over the period, relative to the contribution from domestic plant turnover due to entry and exit.

This research also shows that there are spillovers from foreign-controlled plants to domestic producers. While foreign-controlled plants directly generate benefits because of higher productivity growth within the foreign sector, they are indirectly responsible for productivity performance within the domestic sector. The productivity growth of domestic producers is higher when there is a large presence of foreign producers, and the generated benefits are concentrated in smaller and younger domestic plants. Spillover benefits are related to increased competition from the foreign presence and the increased use of domestic technologies in domestic plants that face a large foreign presence.

The spillovers from foreign multinationals extend to domestic firms in the same manufacturing industry and to other industries. Lileeva (2006) examines the effect of vertical linkages of domestic plants with industries dominated by foreign-controlled firms and finds that the presence of foreign producers in supplier sectors has a strong positive association with productivity growth in Canada. She also finds that the technological content of these linkages is important. The benefits of the presence of foreign suppliers are particularly important for science-based manufacturing industries (producers of chemicals, computers, electronics, and machinery and equipment).

Plant birth and death is only one aspect of the dynamic change that is continuously taking place within industries. Another facet involves mergers that consist of horizontal aggregations of firms within the same industry or acquisitions of a firm in one industry by a firm in a different industry. The latter brings new firms into an industry—a form of entry. In terms of the employment affected by control change, the latter is as important as greenfield entry—entry via the creation of new plants (Baldwin 1995). Mergers bring new firms into industries where greenfield entry is difficult because of size constraints. It is the way in which new firms enter the large-firm segment of most manufacturing industries.

Mergers are sometimes seen to be counterproductive. But research at Statistics Canada has shown that, on average, mergers are not failures. While Mueller (1985) found that merged firms lost considerable market share, there was no evidence of this in Canada when the natural regression-to-the-mean process is taken into account (Baldwin 1995). The productivity of plants acquired by entrants is slightly below the mean at the time of acquisition; it experiences a short-run increase in the period after the merger. In the long run, there is some evidence of a sustained increase for some merger categories. Mergers also affect price-cost margins. In all situations where a plant is divested by an exiting firm, the plant's price-cost margin is not significantly different on average from the average price-cost margin of other plants prior to the merger—but it is afterwards.

While mergers tend on balance to have a positive effect, Baldwin and Sabourin (2004) find that transfers of manufacturing plants from domestic to foreign control tend to increase productivity, while transfers from foreign to domestic control do the reverse. When the cross-industry pattern of mergers is investigated further, a considerable difference in these effects was discovered. Mergers involving foreign producers generally led to greater gains in productivity, wages, profitability or market share than did mergers between domestic firms. But productivity increases were concentrated mainly in high-tech and product-differentiated manufacturing industries (Baldwin and Caves 1991). These are also the industries where foreign ownership was highest. As such, mergers involving foreign multinational firms were more likely to have productivity and profitability enhancing effects than were mergers between purely domestic firms, primarily because they were taking place in industries where knowledge assets were more extensive. However, this was the result of the concentration of foreign mergers in industries where firms possess special assets—either special scientific knowledge or marketing skills. These are industries where mergers are the mechanism whereby specialized knowledge is best transferred. It is noteworthy, however, that the productivity-enhancing effect in these industries was the same for both domestic and foreign acquiring firms (Baldwin and Caves 1991). This indicates that the industry environment rather than the nationality of the acquirer is the primary determinant of a merger's effect.

3.5 Knowledge-based management functions—vibrant or hollowed-out?

While traditional research has focused on the location of production units, recent studies have been conducted that examine the factors that are correlated with head-office activities. Head offices are important units of analysis because they provide specialized management functions, such as information acquisition and filtering—critical activities that allow large firms to overcome diseconomies of scale. Head offices are also home to proportionately large concentrations of high-skill, high-wage workers. In terms of urban development, head offices are often seen as ‘prize jewels.’

The size of the multinational head-office function is also of interest because it speaks to the nature of the multinational’s division of functional activities. A model that treats the multinational as one that centralizes functions that relate to its specific assets (the knowledge assets that it is exploiting) will portray local entities as truncated, both with respect to knowledge-creating activities like R&D and knowledge-management facilities like head-office functions. A model that treats the multinational firm as one that transmits knowledge across boundaries is compatible with situations where large amounts of local-management expertise are required by the multinational to manage its knowledge assets in the local economy.

For these reasons, there is considerable interest in how the activities of Canada’s head-office population—notably their location and employment characteristics—have been changing over time. Proponents of ‘truncation-based’ explanations of foreign multinational behaviour have argued that foreign-controlled firms tend to ‘hollow-out’ their value-added management functions, shifting high-value jobs to home economies.

A study by Baldwin, Beckstead and Brown (2003) provides a comprehensive statistical analysis of head offices in Canada (both foreign- and domestic-controlled). Focusing on a large cross-section of industries, the authors found little evidence, in the main, that head-office functions were being scaled down during the late 1990s and early 2000s. What is more, even in sectors where head-office employment trends were more consistent with the hollowing-out hypothesis, it is difficult to disentangle the magnitude of hollowing-out from efficiency gains that affect the quantity of head-office employment.

Baldwin and Brown (2004) examine long-run trends in head-office employment in the manufacturing sector over the last three decades. Here too, little evidence of hollowing-out is apparent. The authors find that foreign ownership is positively associated with (1) the likelihood that the firm will establish a head office, and (2) with the level of the firm’s head-office employment.

Baldwin and Brown (2004) place the issue of head-office employment change within a broader context, noting a variety of factors that can be expected to affect the size of the management function within firms. These include the general shift toward high-skilled workers associated with increased skill requirements and changes in technology, and the move toward less hierarchical management structures. Baldwin and Brown stress that foreign

ownership is one of many factors that influence the size of the head-office function. Other factors include industry membership, multi-plant status, the degree to which the business is industrially diversified, and the geographic location and scope of its activities.

Finally, Beckstead and Brown (2006) explicitly examine the head-office characteristics of foreign multinationals over the period 1999 to 2005. They find that much of the dynamism in Canada's head-office sector actually comes from foreign-controlled firms. The head offices of foreign-controlled firms accounted for six out of ten new head-office jobs created during this period. The effect of foreign takeovers has not been to reduce the number of head offices in Canada nor head-office employment. As a result of foreign takeovers, more new head offices were created than lost, and aggregate employment in head offices was just as high after the takeovers had occurred as before.

Endnotes

10. See Baldwin and Gellatly (2003) for evidence that the market rewards more innovative firms with growth.
11. See Caves (1982), Chapter 4.

Chapter 4. Outward activities: Canadian multinationals operating abroad

While the activities of foreign-controlled companies operating in Canadian markets have long received close scrutiny by analysts, far less attention has been paid to the foreign activities of Canadian-based multinationals. This longstanding bias in favour of inward activity over outward activity is understandable, as most observers are apt to be more interested in corporate activities that occur 'here at home' than in those that occur abroad. This preference for inward over outward analysis also reflects the operational constraints that characterize national statistical systems that are designed to produce estimates of the economic activities that occur within national borders, not to provide a full account of the global activities of resident corporations.

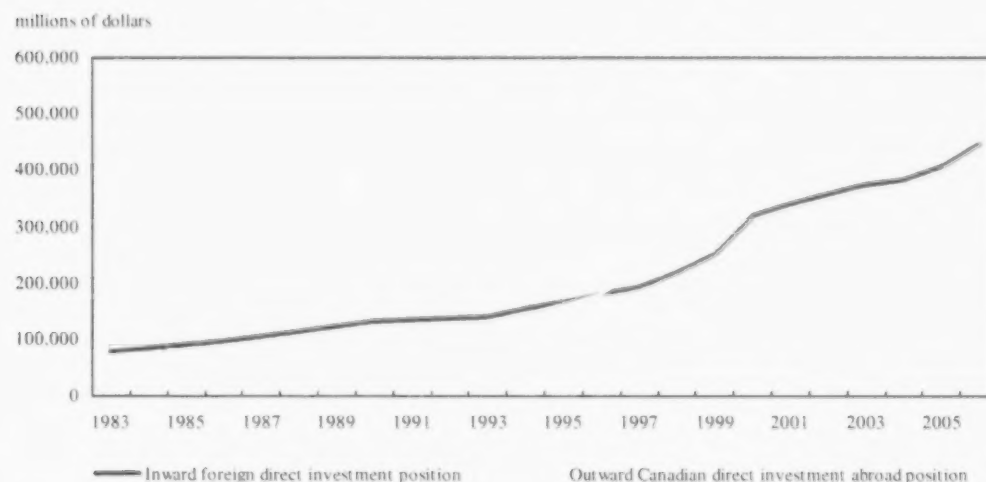
Another factor that helps shape the strong demand for inward analysis is the widely perceived notion that inward foreign direct investment (FDI) is more important than outward bound direct investment. Statistics Canada's balance of payments (BOP) program collects information on the outward activities of Canadian firms and Canadian-based subsidiaries in foreign markets. Most visibly, the BOP program has long produced estimates of Canadian direct investment abroad (CDIA). Taken together, these outflows and inflows described earlier provide a base estimate of the net flow of direct investment capital between Canada and other countries.

While the inward bound stock of FDI used to exceed the outward bound stock, this is no longer the case. One standard means of evaluating the relative size of these claims is via BOP statistics on Canada's net direct investment position—the difference between the stock of CDIA and the stock of inward FDI in Canada. Over the last two decades, Canada's net direct investment position has progressively shifted from debtor to creditor status, as outward investments have outpaced inward FDI investments. Both, it should be noted, have increased dramatically. From 1986 to 2006, Canada's stock of inward FDI grew, on average, by 8% annually. But Canada's stock of outward direct investment increased at an average annual rate of 11%. By the mid-1990s, the outward CDIA stock had surpassed the inward FDI stock (see Figure 4).

While there are fewer studies of Canadian multinationals operating abroad, there are several that have begun to develop a profile of this activity. For example, Gorecki (1990, 1992) undertook a detailed analysis of direct investment abroad during the 1970s and the 1980s. Using BOP data, he found that the overall distribution of outward direct investment was highly skewed, with small numbers of large investor firms accounting for a large percentage

of total investment. In 1986, the eight largest investor firms accounted for one third of all outward FDI. Throughout the 1970s and 1980s, roughly one half of outward investment occurred in manufacturing industries. In terms of ownership, most direct investment occurred in wholly or majority-owned affiliates, as opposed to joint ventures. His study also found that outward investment has become increasingly concentrated in the United States. From 1975 to 1986, the share of total outward investment that occurred in the United States increased from 53% to 71%. Gorecki also noted that most CDIA tends to be horizontal in nature, with outward investments occurring in the industry that best characterizes a multinational's domestic operations.

Figure 4
Inward and outward foreign direct investment stock



Source: Statistics Canada, CANSIM table 376-0038.

Chow (1997) also used BOP data to provide a detailed demographic analysis of the business population responsible for Canadian investment abroad (consisting of both Canadian- and foreign-controlled companies). The author reports that during the late 1980s these outward investments became more geographically diverse, with the United Kingdom and other European countries increasing their investment shares. This coincided with a reduction in the U.S. share of CDIA—which decreased from 69% in 1985 to 58% in 1991.¹² Chow also examined the industrial distribution of CDIA, which was largely concentrated in finance and insurance industries.

Following Gorecki, Chow also found that the outward investments of Canadian-based firms are primarily horizontal in nature, that is, “investors generally invested in the same industry as the ones [*sic*] in which they operate in Canada” (Chow 1997, 12). Horizontal patterns were evident for most sectors (especially communications and transportations services). One explanation for horizontal-outward strategies is that firms are concentrating on “min[ing]

[their] comparative advantage" (Chow 1997, 12–13). The study also notes that Canadian-controlled enterprises investing abroad are more likely to pursue horizontal (outward) investment strategies than are foreign-controlled (Canadian-based) enterprises investing abroad.

Recently, Marth (2004) used BOP data to examine the wave of merger and acquisition activity from 1997 to 2002 and noted that the acquisitions of foreign companies by Canadian firms outpaced foreign acquisitions of companies in Canada—by 447 to 345, respectively—though, as the author observed, the total value of these acquisitions abroad, at some \$124 billion, was smaller than the value of the inward flows over this six-year period (\$144 billion). A considerable share of the foreign acquisitions by Canadian companies (43%) occurred in high-tech electrical and electronics industries. Marth's analysis also highlights the importance of share exchanges as a means of financing cross-border acquisitions.

Cardillo (2002) used BOP data to examine the sales performance of Canadian-owned affiliates operating abroad. By 1999, the foreign sales of Canadian affiliates were sizable—roughly 70% the size of Canada's exports. Approximately 70% of these foreign-affiliate sales occurred in the U.S. market. Foreign sales by Canadian affiliates are highly concentrated in three industries: manufacturing (48% of total sales), finance and insurance (12%) and information and culture industries (10%) (Cardillo 2002, Table 2).

Much of the work on the characteristics of multinationals focuses on understanding the differences between the Canadian operations of foreign-controlled and domestic-controlled firms in general. But the latter contain both firms that operate in international markets (domestic multinationals) and firms that operate only in the domestic Canadian market. The characteristics that are usually attributed to foreign multinationals may not be associated so much with a nationality trait, but rather with the fact that these firms are functioning in international markets.

Analytic research at Statistics Canada has focused on this issue. Baldwin and Hanel (2000, 2003) use an innovation survey that distinguishes between Canadian and foreign multinationals and find that the former resemble the latter when it comes to innovation intensity. Baldwin and Gu (2005) extend the comparison to examine measures of value-added per worker, gross output per worker, worker wages, the share of non-production workers, and types of technologies used. They find that there is not much difference in most of these characteristics between foreign-controlled plants and domestic-controlled plants whose parent has an international orientation. For research and development and innovation, the results indicate that domestic producers with foreign operations (referred to as domestic multinationals) actually exhibit a slightly better performance after controls for size, age and industry are taken into account. The foreign-ownership advantage that is present in other studies that compare the plants that are owned by foreign multinationals with domestic plants is really a multinational advantage.

Endnote

12. Lajule (2001) also shows that Canadian direct investment abroad has become more geographically diversified over the last 20 years.

Chapter 5. Conclusion: Assessing our progress

Statistics Canada has published, and continues to produce, a large array of information products that provide data and analysis on multinationals operating in the domestic economy. Some of these products derive from longstanding statistical programs that are designed *inter alia* to generate key indicators of foreign multinational activity. The Balance of Payments Division routinely produces data on Canada's foreign direct investment position—the cumulative stock of foreign direct investment in Canada—along with data on the period-specific investment flows that effect changes in the foreign direct investment (FDI) stock at the margin. The Industrial Organization and Finance Division collects and publishes data under the *Corporations Returns Act*, data specially designed to yield estimates of the percentage of corporate assets, revenues and profits controlled by foreign corporations in different sectors of the economy. Estimates of foreign control and FDI estimates have long served as important inputs into the policy process.

Statistics on foreign investment and foreign control provide basic information on the extent to which foreign multinationals are active in Canada's economy. These have been supplemented with analytical products that offer more detailed investigations of the composition of foreign investment and foreign control.

Examples include a time-series analysis of the geographic characteristics of inward FDI flows (Lajule 2001) and several papers (Taylor 2001, Guèvremont 2001) that examine how changes in industrial organization, such as the increased incidence of merger and acquisition activity, underlie changes in foreign control. Baldwin and Gellatly (2005) evaluate the determinants of foreign-control changes over time. These and other studies provide for a basic portrait of the evolving nature of foreign activity in Canadian industry.

Statistics Canada has also complemented its statistics on foreign control and FDI with a growing number of analytical studies that investigate the characteristics of foreign multinational firms operating in domestic markets. Many of these studies derive from administrative data sources and special business surveys that Statistics Canada has conducted to enhance its analytical capacity.

During the 1990s, several of these studies (Olineck and McMechan 1996, Mersereau 1992) examined the link between multinationals and trade. These studies provided new evidence on whether policies aimed at trade liberalization help to create the conditions under which multinationals can be expected to flourish. The results reinforced the centrality of foreign

multinationals to Canadian trade flows, as the transactions that these firms conduct with their home countries account for large shares of export and import activity. Trade intensity is one area in which foreign firms excel.

A wave of subsequent papers bolstered our knowledge of the operating practices of foreign multinationals, most notably with regards to innovation and technology management. There is substantial value-added associated with these studies. First and foremost, these studies have contributed much to the debate over whether foreign multinationals are an asset or a liability to Canada's economic competitiveness. In so doing, they have helped to dispel the long-held myth that foreign multinationals suffer gross deficiencies. Foreign multinationals are often good firms—they are innovative; they stress the adoption of advanced technologies; they pay high wages; and they are highly productive (Baldwin and Hanel 2000). More importantly, the multinational advantage over purely domestic firms has been increasing over time (Baldwin and Dhaliwahi 2001). This has led this group to contribute disproportionately to productivity growth in Canadian manufacturing (Baldwin and Gu 2005).

These firm-level studies are also contributing to a more nuanced understanding of how foreign-controlled businesses operating in Canada stack up to their domestic competitors. Just as earlier commentary on foreign multinationals often cast these firms in a negative light, there is a temptation, based on the results of these new studies, to conclude that foreign firms are somehow inherently better than their domestic competitors, even after accounting for the standard set of firm and industry controls. Here new research offers significant insight. Baldwin and Hanel (2003) as well as Baldwin and Gu (2005) conclude that performance differentials between foreign and domestic firms may stem from a multinational advantage more so than an ownership advantage. Hence, foreign-controlled plants excel because of the organizational or technological advantages of being located within multinational enterprises, not because their parent firm is located abroad. Plants owned by Canadian multinationals were shown to perform just as well as their foreign-controlled competitors. Both groups, on balance, are more likely to be more innovative and more productive than plants that are not affiliated with multinationals.

Two other new findings are emerging as research on multinationals continues. First, foreign plants operating in Canadian manufacturing industries have been shown to confer positive spillovers on domestic manufacturing plants. Baldwin and Gu (2005) provide evidence that these spillovers derive from increases in competitive intensity and technology adoption. These findings corroborate earlier Canadian research on the productivity benefits of foreign firms. They also set the stage for new studies that examine the extent to which the competitive restructuring that occurs continuously in the marketplace entails productivity spillovers from growing to declining firms (Beckstead and Gellatly 2007).

The second new finding focuses on the performance-enhancing benefits of multinational structures, noted above. To some extent, this may have more to do with the external or outward focus that plants located in multinational enterprises tend to exhibit. Multinationals have relatively high trade intensities. There is some evidence that the quality of

outwardness—the extent to which firms or plants concentrate on markets beyond their domestic borders—is the salient strategic factor separating high-performance firms from others. Baldwin and Gu (2004) have stressed the link between export activity and performance outcomes within domestic plant populations. Export intensity is positively associated with productivity growth and foreign multinationals have higher export intensities. As Baldwin and Gu (2005) demonstrate, the productivity benefits of exporting accrue from a variety of mechanisms, including *inter alia* learning-by-doing and exposure to international competition—which increases awareness of new technologies and best practices. This leads to a parallel conclusion, namely, that it is the international orientation of a firm, or its degree of globalization, that leads to better productivity performance—more so than ownership. International orientation and multinational structure are highly correlated, as domestic multinationals have higher export intensities than other domestic firms.

In a similar vein, while takeovers of domestic firms by foreign companies lead to more productivity gains than losses, this is primarily the result of the location of foreign multinationals in industries where mergers are more likely to have productivity enhancing effects—because they facilitate the transfer of knowledge assets, which are more important in some industries than others. When domestic firms engage in merger activity in science-based industries, the merger process has qualitatively the same beneficial result as a foreign merger (Baldwin and Caves 1991).

Much of the research described in this report suggests that foreign multinationals, as a group, are unique in that they possess a set of readily identifiable characteristics. They are not the only firms with these characteristics. Nevertheless, they are more adept at pursuing innovative activities; they are the dominant participants in certain markets that have adopted advanced technologies most intensively, that perform research and development, and that provide innovative products that are diffused elsewhere as investment goods or as intermediate products (Baldwin and Hanel 2003). Foreign-controlled plants operate in those industries and in those segments of industries where special competencies related to their ability to manage knowledge assets are required for success. Foreign multinationals make substantial contributions to Canada's economic performance.

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